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Sequence Listing could not be accepted due to errors.

See attached Validation Report.

If you need help call the Patent Electronic Business Center at (866) 217-9197 (toll free).

Reviewer: Keisha Douglas

Timestamp: [year=2008; month=11; day=18; hr=19; min=4; sec=2; ms=898;]

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Reviewer Comments:

<210> 8

<211> 31

<212> DNA

<213> Artificial Sequence

<220> Feature:

<223> Other Information: Primer sequence

<400> 8

Per the above sequence id# 8, please do not insert any responses for numeric identifier <220>, this line must be blank at all times. Please correct the remaining sequence showing similar errors.

Application No: 10553097 Version No: 2.0

Input Set:

Output Set:

Started: 2008-10-21 11:25:19.654
Finished: 2008-10-21 11:25:20.245
Elapsed: 0 hr(s) 0 min(s) 0 sec(s) 591 ms
Total Warnings: 2
Total Errors: 2
No. of SeqIDs Defined: 9
Actual SeqID Count: 9

| Error code | Error Description |
|------------|--|
| W 213 | Artificial or Unknown found in <213> in SEQ ID (8) |
| E 311 | Invalid field content in <220> in SEQ ID (8) |
| W 213 | Artificial or Unknown found in <213> in SEQ ID (9) |
| E 311 | Invalid field content in <220> in SEQ ID (9) |

SEQUENCE LISTING

<110> National Renewable Energy Laboratory

<120> OXYGEN RESISTANT HYDROGENASES AND METHODS FOR DESIGNING AND MAKING SAME

<130> NREL 03-11

<140> 10553097

<141> 2008-10-21

<160> 9

<170> PatentIn version 3.4

<210> 1

<211> 333

<212> PRT

<213> Chlamydomonas reinhardtii

<400> 1

Pro Val Ala Ala Leu Lys Glu Lys Ser His Ile Glu Lys Val Gln Glu
1 5 10 15

Ala Leu Asn Asp Pro Lys Lys His Val Ile Val Ala Met Ala Pro Ser
20 25 30

Val Arg Thr Ala Met Gly Glu Leu Phe Lys Met Gly Tyr Gly Lys Asp
35 40 45

Val Thr Gly Lys Leu Tyr Thr Ala Leu Arg Met Leu Gly Phe Asp Lys
50 55 60

Val Phe Asp Ile Asn Phe Gly Ala Asp Met Thr Ile Met Glu Glu Ala
65 70 75 80

Thr Glu Leu Leu Gly Arg Val Lys Asn Asn Gly Pro Phe Pro Met Phe
85 90 95

Thr Ser Cys Cys Pro Ala Trp Val Arg Leu Ala Gln Asn Tyr His Pro
100 105 110

Glu Leu Leu Asp Asn Leu Ser Ser Ala Lys Ser Pro Gln Gln Ile Phe
115 120 125

Gly Thr Ala Ser Lys Thr Tyr Tyr Pro Ser Ile Ser Gly Ile Ala Pro
130 135 140

Glu Asp Val Tyr Thr Val Thr Ile Met Pro Cys Asn Asp Lys Lys Tyr
145 150 155 160

Glu Ala Asp Ile Pro Phe Met Glu Thr Asn Ser Leu Arg Asp Ile Asp
165 170 175

Ala Ser Leu Thr Thr Arg Glu Leu Ala Lys Met Ile Lys Asp Ala Lys
180 185 190

Ile Lys Phe Ala Asp Leu Glu Asp Gly Glu Val Asp Pro Ala Met Gly
195 200 205

Thr Tyr Ser Gly Ala Gly Ala Ile Phe Gly Ala Thr Gly Gly Val Met
210 215 220

Glu Ala Ala Ile Arg Ser Ala Lys Asp Phe Ala Glu Asn Lys Glu Leu
225 230 235 240

Glu Asn Val Asp Tyr Thr Glu Val Arg Gly Phe Lys Gly Ile Lys Glu
245 250 255

Ala Glu Val Glu Ile Ala Gly Asn Lys Leu Asn Val Ala Val Ile Asn
260 265 270

Gly Ala Ser Asn Phe Phe Glu Phe Met Lys Ser Gly Lys Met Asn Glu
275 280 285

Lys Gln Tyr His Phe Ile Glu Val Met Ala Cys Pro Gly Gly Cys Ile
290 295 300

Asn Gly Gly Gly Gln Pro His Val Asn Ala Leu Asp Arg Glu Asn Val
305 310 315 320

Asp Tyr Arg Lys Leu Arg Ala Ser Val Leu Tyr Asn Gln
325 330

<210> 2

<211> 333

<212> PRT

<213> Chlamydomonas reinhardtii

<400> 2

Pro Val Ala Ala Leu Ser Glu Lys Ser His Met Asp Arg Val Lys Asn
1 5 10 15

Ala Leu Asn Ala Pro Glu Lys His Val Ile Val Ala Met Ala Pro Ser
20 25 30

Val Arg Ala Ser Ile Gly Glu Leu Phe Asn Met Gly Phe Gly Val Asp
35 40 45

Val Thr Gly Lys Ile Tyr Thr Ala Leu Arg Gln Leu Gly Phe Asp Lys
50 55 60

Ile Phe Asp Ile Asn Phe Gly Ala Asp Met Thr Ile Met Glu Glu Ala
65 70 75 80

Thr Glu Leu Val Gln Arg Ile Glu Asn Asn Gly Pro Phe Pro Met Phe
85 90 95

Thr Ser Cys Cys Pro Gly Trp Val Arg Gln Ala Glu Asn Tyr Tyr Pro
100 105 110

Glu Leu Leu Asn Asn Leu Ser Ser Ala Lys Ser Pro Gln Gln Ile Phe
115 120 125

Gly Thr Ala Ser Lys Thr Tyr Tyr Pro Ser Ile Ser Gly Leu Asp Pro
130 135 140

Lys Asn Val Phe Thr Val Thr Val Met Pro Cys Thr Ser Lys Lys Phe
145 150 155 160

Glu Ala Asp Arg Pro Gln Met Glu Lys Asp Gly Leu Arg Asp Ile Asp
165 170 175

Ala Val Ile Thr Thr Arg Glu Leu Ala Lys Met Ile Lys Asp Ala Lys
180 185 190

Ile Pro Phe Ala Lys Leu Glu Asp Ser Glu Ala Asp Pro Ala Met Gly
195 200 205

Glu Tyr Ser Gly Ala Gly Ala Ile Phe Gly Ala Thr Gly Gly Val Met
210 215 220

Glu Ala Ala Leu Arg Ser Ala Lys Asp Phe Ala Glu Asn Ala Glu Leu

225 230 235 240

Glu Asp Ile Glu Tyr Lys Gln Val Arg Gly Leu Asn Gly Ile Lys Glu
245 250 255

Ala Glu Val Glu Ile Asn Asn Asn Lys Tyr Asn Val Ala Val Ile Asn
260 265 270

Gly Ala Ser Asn Leu Phe Lys Phe Met Lys Ser Gly Met Ile Asn Glu
275 280 285

Lys Gln Tyr His Phe Ile Glu Val Met Ala Cys His Gly Gly Cys Val
290 295 300

Asn Gly Gly Gly Gln Pro His Val Asn Pro Lys Asp Leu Glu Lys Val
305 310 315 320

Asp Ile Lys Lys Val Arg Ala Ser Val Leu Tyr Asn Gln
325 330

<210> 3
<211> 321
<212> PRT
<213> Chlamydomonas reinhardtii

<400> 3

Pro Glu Asn Ala Ile Tyr Glu Ala Gln Ser Trp Val Pro Glu Val Glu
1 5 10 15

Lys Lys Leu Lys Asp Gly Lys Val Lys Cys Ile Ala Met Pro Ala Pro
20 25 30

Ala Val Arg Tyr Ala Leu Gly Asp Ala Phe Gly Met Pro Val Gly Ser
35 40 45

Val Thr Thr Gly Lys Met Leu Ala Ala Leu Gln Lys Leu Gly Phe Ala
50 55 60

His Cys Trp Asp Thr Glu Phe Thr Ala Asp Val Thr Ile Trp Glu Glu
65 70 75 80

Gly Ser Glu Phe Val Glu Arg Leu Thr Lys Lys Ser Asp Met Pro Leu
85 90 95

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Pro | Gln | Phe | Thr | Ser | Cys | Cys | Pro | Gly | Trp | Gln | Lys | Tyr | Ala | Glu | Thr | 100 | 105 | 110 |
| Tyr | Tyr | Pro | Glu | Leu | Leu | Pro | His | Phe | Ser | Thr | Cys | Lys | Ser | Pro | Ile | 115 | 120 | 125 |
| Gly | Met | Asn | Gly | Ala | Leu | Ala | Lys | Thr | Tyr | Gly | Ala | Glu | Arg | Met | Lys | 130 | 135 | 140 |
| Tyr | Asp | Pro | Lys | Gln | Val | Tyr | Thr | Val | Ser | Ile | Met | Pro | Cys | Ile | Ala | 145 | 150 | 155 |
| Lys | Lys | Tyr | Glu | Gly | Leu | Arg | Pro | Glu | Leu | Lys | Ser | Ser | Gly | Met | Arg | 165 | 170 | 175 |
| Asp | Ile | Asp | Ala | Thr | Leu | Thr | Thr | Arg | Glu | Leu | Ala | Tyr | Met | Ile | Lys | 180 | 185 | 190 |
| Lys | Ala | Gly | Ile | Asp | Phe | Ala | Lys | Leu | Pro | Asp | Gly | Lys | Arg | Asp | Ser | 195 | 200 | 205 |
| Leu | Met | Gly | Glu | Ser | Thr | Gly | Gly | Ala | Thr | Ile | Phe | Gly | Val | Thr | Gly | 210 | 215 | 220 |
| Gly | Val | Met | Glu | Ala | Ala | Leu | Arg | Phe | Ala | Tyr | Glu | Ala | Val | Thr | Gly | 225 | 230 | 235 |
| Lys | Lys | Pro | Asp | Ser | Trp | Asp | Phe | Lys | Ala | Val | Arg | Gly | Leu | Asp | Gly | 245 | 250 | 255 |
| Ile | Lys | Glu | Ala | Thr | Val | Asn | Val | Gly | Gly | Thr | Asp | Val | Lys | Val | Ala | 260 | 265 | 270 |
| Val | Val | His | Gly | Ala | Lys | Arg | Phe | Lys | Gln | Val | Cys | Asp | Asp | Val | Lys | 275 | 280 | 285 |
| Ala | Gly | Lys | Ser | Pro | Tyr | His | Phe | Ile | Glu | Tyr | Met | Ala | Cys | Pro | Gly | 290 | 295 | 300 |
| Gly | Cys | Val | Cys | Gly | Gly | Gly | Gln | Pro | Val | Met | Pro | Gly | Val | Leu | Glu | 305 | 310 | 315 |
| | | | | | | | | | | | | | | | | | | 320 |

Ala

<210> 4

<211> 393

<212> PRT

<213> Chlamydomonas reinhardtii

<400> 4

Ala Thr Asp Ala Val Pro His Trp Lys Leu Ala Leu Glu Glu Leu Asp
1 5 10 15

Lys Pro Lys Asp Gly Gly Arg Lys Val Leu Ile Ala Gln Val Ala Pro
20 25 30

Ala Val Arg Val Ala Ile Ala Glu Ser Phe Gly Leu Ala Pro Gly Ala
35 40 45

Val Ser Pro Gly Lys Leu Ala Ala Gly Leu Arg Ala Leu Gly Phe Asp
50 55 60

Gln Val Phe Asp Thr Leu Phe Ala Ala Asp Leu Thr Ile Met Glu Glu
65 70 75 80

Gly Thr Glu Leu Leu His Arg Leu Lys Glu His Leu Glu Ala His Pro
85 90 95

His Ser Asp Glu Pro Leu Pro Met Phe Thr Ser Cys Cys Pro Gly Trp
100 105 110

Val Ala Met Met Glu Lys Ser Tyr Pro Glu Leu Ile Pro Phe Val Ser
115 120 125

Ser Cys Lys Ser Pro Gln Met Met Met Gly Ala Met Val Lys Thr Tyr
130 135 140

Leu Ser Glu Lys Gln Gly Ile Pro Ala Lys Asp Ile Val Met Val Ser
145 150 155 160

Val Met Pro Cys Val Arg Lys Gln Gly Glu Ala Asp Arg Glu Trp Phe
165 170 175

Cys Val Ser Glu Pro Gly Val Arg Asp Val Asp His Val Ile Thr Thr
180 185 190

Ala Glu Leu Gly Asn Ile Phe Lys Glu Arg Gly Ile Ile Leu Pro Glu
195 200 205

Leu Pro Asp Ser Asp Trp Asp Gln Pro Leu Gly Leu Gly Ser Gly Ala
210 215 220

Gly Val Leu Phe Gly Thr Thr Gly Gly Val Met Glu Ala Ala Val Arg
225 230 235 240

Thr Ala Tyr Glu Ile Val Thr Lys Glu Pro Leu Pro Arg Leu Asn Leu
245 250 255

Ser Glu Val Arg Gly Leu Asp Gly Ile Lys Glu Ala Ser Val Thr Leu
260 265 270

Val Pro Ala Pro Gly Ser Lys Phe Ala Glu Leu Val Ala Ala Arg Leu
275 280 285

Ala His Lys Val Glu Glu Ala Ala Ala Glu Ala Ala Ala Val
290 295 300

Glu Gly Ala Val Lys Pro Pro Ile Ala Tyr Asp Gly Gly Gln Gly Phe
305 310 315 320

Ser Thr Asp Asp Gly Lys Gly Gly Leu Lys Leu Arg Val Ala Val Ala
325 330 335

Asn Gly Leu Gly Asn Ala Lys Lys Leu Ile Gly Lys Met Val Ser Gly
340 345 350

Glu Ala Lys Tyr Asp Phe Val Glu Ile Met Ala Cys Pro Ala Gly Cys
355 360 365

Val Gly Gly Gly Gly Gln Pro Arg Ser Thr Asp Lys Gln Ile Thr Gln
370 375 380

Lys Arg Gln Ala Ala Leu Tyr Asp Leu
385 390

<210> 5
<211> 386
<212> PRT

<213> Chlamydomonas reinhardtii

<400> 5

Ala Glu Ala Pro Leu Ser His Val Gln Gln Ala Leu Ala Glu Leu Ala
1 5 10 15

Lys Pro Lys Asp Asp Pro Thr Arg Lys His Val Cys Val Gln Val Ala
20 25 30

Pro Ala Val Arg Val Ala Ile Ala Glu Thr Leu Gly Leu Ala Pro Gly
35 40 45

Ala Thr Thr Pro Lys Gln Leu Ala Glu Gly Leu Arg Arg Leu Gly Phe
50 55 60

Asp Glu Val Phe Asp Thr Leu Phe Gly Ala Asp Leu Thr Ile Met Glu
65 70 75 80

Glu Gly Ser Glu Leu Leu His Arg Leu Thr Glu His Leu Glu Ala His
85 90 95

Pro His Ser Asp Glu Pro Leu Pro Met Phe Thr Ser Cys Cys Pro Gly
100 105 110

Trp Ile Ala Met Leu Glu Lys Ser Tyr Pro Asp Leu Ile Pro Tyr Val
115 120 125

Ser Ser Cys Lys Ser Pro Gln Met Met Leu Ala Ala Met Val Lys Ser
130 135 140

Tyr Leu Ala Glu Lys Lys Gly Ile Ala Pro Lys Asp Met Val Met Val
145 150 155 160

Ser Ile Met Pro Cys Thr Arg Lys Gln Ser Glu Ala Asp Arg Asp Trp
165 170 175

Phe Cys Val Asp Ala Asp Pro Thr Leu Arg Gln Leu Asp His Val Ile
180 185 190

Thr Thr Val Glu Leu Gly Asn Ile Phe Lys Glu Arg Gly Ile Asn Leu
195 200 205

Ala Glu Leu Pro Glu Gly Glu Trp Asp Asn Pro Met Gly Val Gly Ser

210

215

220

Gly Ala Gly Val Leu Phe Gly Thr Thr Gly Gly Val Met Glu Ala Ala
 225 230 235 240

Leu Arg Thr Ala Tyr Glu Leu Phe Thr Gly Thr Pro Leu Pro Arg Leu
 245 250 255

Ser Leu Ser Glu Val Arg Gly Met Asp Gly Ile Lys Glu Thr Asn Ile
 260 265 270

Thr Met Val Pro Ala Pro Gly Ser Lys Phe Glu Glu Leu Leu Lys His
 275 280 285

Arg Ala Ala Ala Arg Ala Glu Ala Ala Ala His Gly Thr Pro Gly Pro
 290 295 300

Leu Ala Trp Asp Gly Gly Ala Gly Phe Thr Ser Glu Asp Gly Arg Gly
 305 310 315 320

Gly Ile Thr Leu Arg Val Ala Val Ala Asn Gly Leu Gly Asn Ala Lys
 325 330 335

Lys Leu Ile Thr Lys Met Gln Ala Gly Glu Ala Lys Tyr Asp Phe Val
 340 345 350

Glu Ile Met Ala Cys Pro Ala Gly Cys Val Gly Gly Gly Gly Gln Pro
 355 360 365

Arg Ser Thr Asp Lys Ala Ile Thr Gln Lys Arg Gln Ala Ala Leu Tyr
 370 375 380

Asn Leu
 385

<210> 6

<211> 441

<212> PRT

<213> Chlamydomonas reinhardtii

<400> 6

Ala Ala Pro Ala Ala Glu Ala Pro Leu Ser His Val Gln Gln Ala Leu
 1 5 10 15

| | | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Glu | Leu | Ala | Lys | Pro | Lys | Asp | Asp | Pro | Thr | Arg | Lys | His | Val | Cys | 20 | 25 | 30 |
| Val | Gln | Val | Ala | Pro | Ala | Val | Arg | Val | Ala | Ile | Ala | Glu | Thr | Leu | Gly | 35 | 40 | 45 |
| Leu | Ala | Pro | Gly | Ala | Thr | Thr | Pro | Lys | Gln | Leu | Ala | Glu | Gly | Leu | Arg | 50 | 55 | 60 |
| Arg | Leu | Gly | Phe | Asp | Glu | Val | Phe | Asp | Thr | Leu | Phe | Gly | Ala | Asp | Leu | 65 | 70 | 75 |
| Thr | Ile | Met | Glu | Glu | Gly | Ser | Glu | Leu | Leu | His | Arg | Leu | Thr | Glu | His | 85 | 90 | 95 |
| Leu | Glu | Ala | His | Pro | His | Ser | Asp | Glu | Pro | Leu | Pro | Met | Phe | Thr | Ser | 100 | 105 | 110 |
| Cys | Cys | Pro | Gly | Trp | Ile | Ala | Met | Leu | Glu | Lys | Ser | Tyr | Pro | Asp | Leu | 115 | 120 | 125 |
| Ile | Pro | Tyr | Val | Ser | Ser | Cys | Lys | Ser | Pro | Gln | Met | Met | Leu | Ala | Ala | 130 | 135 | 140 |
| Met | Val | Lys | Ser | Tyr | Leu | Ala | Glu | Lys | Lys | Gly | Ile | Ala | Pro | Lys | Asp | 145 | 150 | 155 |
| Met | Val | Met | Val | Ser | Ile | Met | Pro | Cys | Thr | Arg | Lys | Gln | Ser | Glu | Ala | 165 | 170 | 175 |
| Asp | Arg | Asp | Trp | Phe | Cys | Val | Asp | Ala | Asp | Pro | Thr | Leu | Arg | Gln | Leu | 180 | 185 | 190 |
| Asp | His | Val | Ile | Thr | Thr | Val | Glu | Leu | Gly | Asn | Ile | Phe | Lys | Glu | Arg | 195 | 200 | 205 |
| Gly | Ile | Asn | Leu | Ala | Glu | Leu | Pro | Glu | Gly | Glu | Trp | Asp | Asn | Pro | Met | 210 | 215 | 220 |